REMARKS

Claims 1-10 are pending and Claims 1-10 stand rejected. Claims 3-10 have been amended.

The drawings have been objected to for a misspelling of the word "hole." Attached to this Amendment is a corrected formal drawing in which the term is spelled correctly. It is therefore requested that the objection be withdrawn.

The specification has been objected to for numerous reasons. It is submitted that the attached substitute specification has addressed all of these concerns. It is noted that many of these rejections are the result of typographical and translational errors.

Claims 3, 4, and 6 have been rejected under 35 U.S.C. 112, first paragraph, as lacking written description. Claim 3 is directed to doping the ferromagnetic ZnO-type compound of Claim 1 with at least one of an n-type dopant and a p-type dopant. It is noted that page 6, lines 11-17, of the specification clearly discusses this process. Therefore, it is submitted that the rejection of Claim 3 is improper.

Claim 4 is directed to a ferromagnetic ZnO-type compound. It is noted that a discussion of the subject matter of Claim 4 may be found on page 6, lines 18-27, and page 7, lines 1-22 of the present specification. As the specification clearly discusses the subject matter of Claim 4, it is submitted that a lack of written description rejection for Claim 4 is, therefore, improper and it is requested that the rejection be withdrawn.

Claim 6 is directed towards a method of adjusting the ferromagnetic characteristics of a ferromagnetic ZnO-type compound. As the method claimed in

Claim 6 is described on page 6, lines 18-27, to page 7, lines 1-22, it is submitted that this rejection is not well taken and it is requested that the rejection be withdrawn.

The Office Action also rejected Claims 2 and 3 for lacking support in the specification. In particular, the Examiner has based the rejection on the alleged lack of support for the compounds of Claims 2 and 3 and for the addition of a combination of at least one element selected from V, Cr, Fe, Co, Ni, Rh, or Ru and at least one of a n-type dopant or a p-type dopant. The Examiner has noted that the specification distinguishes between the two types of additions on pages 6, 7, 11, 15, and 16 of the specification. It is submitted that the Examiner has misunderstood Claim 2. It is noted that Claim 2 is directed towards adding at least one element selected from the group consisting of V, Cr, Fe, Co, Ni, Rh, or Ru and also Cu, Mn, and Ti. It is observed that this subject matter is clearly described on page 6, lines 20-25, of the specification. As for Claim 3, it is submitted that this subject matter is also disclosed in the specification on page 6, lines 26-27. In light of the disclosures of the specification, it is submitted that these claims are supported by the specification and it is requested that the rejection be withdrawn.

Claims 2 and 4-10 have been rejected under 35 U.S.C. 112, second paragraph, as indefinite. As for the rejection directed towards Claim 2, it is submitted that no amendments are required. Claim 2 recites that "at least 2" of the listed metals are required. Therefore, it is submitted that the minimum number of metals to be added is two (and not three, as suggested by the Examiner). It is requested that this rejection be withdrawn. It is also submitted that the amendments made to the claims above are

sufficient to overcome the remaining rejections. Therefore, it is requested that the remaining rejections be withdrawn as well.

Claims 4-7 have been provisionally rejected under the judicially-created doctrine of obviousness-type double patenting in light of Claims 1-14 of Application No. 09/806,373. The Examiner has taken the position that the '373 application discloses a ZnO-type compound of ZnO doped with a p-type dopant and at least one n-type dopant. The Examiner has also advanced that the compound of the '373 application falls within the compounds disclosed in section 3 of the presently pending Claim 4. The Examiner, therefore, stated that the compound of the '373 application would inherently be ferromagnetic and would, therefore, inherently exhibit light-filtering characteristics.

It is submitted that the rejection is not well taken because the invention of the '373 application discloses that n-type dopant and p-type dopant are simultaneously doped and the '373 application does not disclose that the doping is carried out together with transition metals or metals such as Mn. Therefore, it is submitted that the present invention is completely different from and not obvious in view of the invention of the '373 application.

As can be seen in the specification, it is a requirement of the present invention that the composition of the present application include an n-type dopant and/or p-type dopant and at least one of the group of listed transition metals, Ti, Mn, or Cu, therefore it is submitted that the rejection is improper as the '373 application does not teach or suggest all of these requirements.

In light of the above arguments, it is submitted that the double patenting rejection is improper and it is requested that the rejection be withdrawn.

Claims 4-7 have been provisionally rejected under 35 U.S.C. 102(e) as anticipated by the '373 application. As the issues raised by this rejection have been responded to tin the above discussion of the double patenting rejection, it is submitted that the rejection is improper. As the '373 application fails to teach all of the claimed aspects of the invention presently claimed in Claims 4-7, it is requested that the rejection be withdrawn.

Claims 4-7 have been rejected under 35 U.S.C. 102(a) as anticipated by WO 00/22202, for which the '373 application is the English language reference. As the issues for this rejection are identical to those of the preceding two rejections, Applicant relies upon the previous discussion as a full and complete response to this rejection as well. Because the WO 00/22202 application fails to teach all of the claimed aspects of the present invention, it is submitted that the WO 00/22202 application cannot anticipate the present invention and it is requested that the rejection be withdrawn.

Claims 1, 4, and 5 have been rejected under 35 U.S.C. 102(e) as anticipated by the Stoner reference. The Examiner has taken the position that the Stoner reference teaches a compound having the formula $(Zn_{1-x}Y_x)O$, wherein X is 0.005-0.16 and Y can be Ni, Cr, Fe, or V. The Examiner has taken the position that these compounds are within the scope of Claims 1 and 4 (in particular sections 1 and 3 of Claim 4). It is submitted that this rejection is not well taken as the Stoner reference in no way discloses the claimed ferromagnetic properties of the present invention. As the Stoner reference fails to teach all of the claimed elements of the present invention, it is submitted that the rejection is improper and it is requested that the rejection be withdrawn.

Claims 4-7 have been rejected under 35 U.S.C. 102(b) as anticipated by the Minegishi reference. The Examiner has taken the position that Minegishi teaches a ZnO-type compound of ZnO that is doped with a p-type dopant and that this compound falls within section 3 of presently pending Claim 4. The Examiner has therefore alleged that the compositions of the Minegishi reference are inherently ferromagnetic. However, it is submitted that there is absolutely no teaching in the Minegishi reference that would lead one to believe that the compositions disclosed therein are ferromagnetic. Therefore, it is submitted that the rejection is improper and that the Examiner failed to carry the burden of proof required for an inherency rejection. It is requested, then, that the rejection be withdrawn.

The Examiner has rejected Claims 1, 4, and 5 under 35 U.S.C. 102(b) as anticipated by the Nitta reference. The Examiner has taken the position that Table I of the Nitta reference teaches the compounds $Zn_{0.5}Fe_{0.5}O$ and $Zn_{0.5}Ni_{0.5}O$. The Examiner has advanced that these compounds fall within the subject matter claimed in Claims 1 and 4 and that the ferromagnetic properties of the claimed compositions would be inherent in the compositions of the Nitta reference. However, it is submitted that there is absolutely no teaching in the Nitta reference that would lead one to believe that the compositions disclosed therein are ferromagnetic. Therefore, it is submitted that the rejection is improper and that the Examiner failed to carry the burden of proof required for an inherency rejection. It is requested, then, that the rejection be withdrawn.

Claims 1 and 4-7 have been rejected under 35 U.S.C. 102(b) as anticipated by the Hager reference. The Examiner has taken the position that the Hager reference teaches ZnO doped with Ru or Rh and the method for producing these compounds.

The Examiner has also taken the position that these compounds fall within Claims 1 and 4 of the present application and that the claimed ferromagnetic properties are inherent in the Hager compounds. However, it is submitted that there is absolutely no teaching in the Hager reference that would lead one to believe that the compositions disclosed therein are ferromagnetic. Therefore, it is submitted that the rejection is improper and that the Examiner failed to carry the burden of proof required for an inherency rejection. It is requested, then, that the rejection be withdrawn.

Claims 1 and 4-7 have been rejected under 35 U.S.C. 102(b) as anticipated in light of the Dausch reference. The Examiner has taken the position that Dausch teaches ZnO doped with divalent Fe, Co or Ni and the method for producing these compounds. The Examiner has also stated that the claimed ferromagnetic properties would be inherent in the Dausch compounds. However, it is submitted that there is absolutely no teaching in the Dausch reference that would lead one to believe that the compositions disclosed therein are ferromagnetic. Therefore, it is submitted that the rejection is improper and that the Examiner failed to carry the burden of proof required for an inherency rejection. It is requested, then, that the rejection be withdrawn.

Claims 1 and 3-7 have been rejected under 35 U.S.C. 102(b) as anticipated by the Miyazaki reference. The Examiner has taken the position that the reference teaches ZnO doped with 1-10 at% of at least one of Cr, B and Ga and the method for producing these compounds. The Examiner has also taken the position that these compounds are embraced by presently pending Claims 1 and 4 and that the ferromagnetic properties of the presently claimed compounds would be inherent in those disclosed in Miyazaki.

It is submitted that this rejection is not well taken and it is observed that the Miyazaki reference discloses that the ZnO is doped with at least one of Si, B, Ti, Mg, Cr, Sn, and Ga to obtain a low emissivity film. It is observed that this doping step reduces the internal stress of the film and that it also improves the moisture resistance of the low emissivity film. However, it is noted that the Miyazaki reference does not disclose anything regarding the use of B and Ga as an n-type dopant. It is submitted that the pending Claim 3 recites doping with an n-type dopant and/or p-type dopant together with metals of Claim 1, but that the Miyazaki reference does not disclose anything about such combinations of dopants and metals. Therefore, it is submitted that the rejection is improper for this reason and that the rejection is improper because there is absolutely no teaching in the Mayazaki reference that would lead one to believe that the compositions disclosed therein are ferromagnetic. Therefore, it is submitted that the rejection is improper and that the Examiner failed to carry the burden of proof required for an inherency rejection. It is requested, then, that the rejection be withdrawn.

Claims 1, 2, and 4-10 have been rejected under 35 U.S.C. 102(b) as anticipated by the Pfrommer reference. The Examiner has taken the position that the reference teaches ZnO doped with Fe or Fe and Mn, thus creating compounds that fall within the subject matter claimed by Claims 1, 2, and 4. The Examiner has also taken the position that the ferromagnetic properties of the present application would be inherently present in those disclosed by the Pfrommer reference.

It is submitted that the rejection is not well taken. It is observed that the Pfrommer reference discloses a method for doping metal oxides to ZnO for cosmetics purposes. Consequently, it does not disclose ZnO compounds that provide ferromagnetic

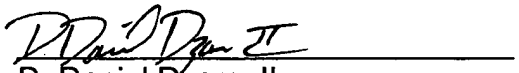
characteristics as is the case of the invention of the present application. Pfrommer seems to disclose a method for doping oxides such as Fe and Mn further to metal-ion-doped ZnO, but does not disclose ZnO-based compounds containing two or more kinds of metals of Claim 2, such as FeMnZnO compound. Still more, nothing is disclosed or suggested about the ferromagnetic characteristics.

With respect to Claim 1, various cited references disclose materials which happen to be obtained by adding other metals to ZnO but the materials are not related to electronic materials for example such as pigments, and no cited reference discloses or suggests that other metals are added in such a manner as to provide ferromagnetic characteristics. For these reasons it is requested that the rejection be withdrawn.

If for any reason, the Examiner feels the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not timely filed, Applicants hereby petition for an appropriate extension of time. The fee for this extension may be charged to our Deposit Account No. 01-2300, referring to client-matter number 107400-00016, along with any other fees which may be required with respect to this application.

Respectfully submitted,



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Enclosure: Marked Up Copy of the Claims
New Specification
Formal Drawing
Petition for Extension of Time (3 months)

MARKED UP COPY OF CLAIMS

3. (Once Amended) The ferromagnetic ZnO-type compound of claim 1, wherein said ZnO-type compound further contains [is doped] at least [either] one of an n-type dopant and a p-type dopant.

4. (Once Amended) A ferromagnetic ZnO-type compound, wherein a ZnO-type compound is added with at least one of

(1) at least one metallic element selected from a group consisting of transition metallic elements of V, Cr, Fe, Co, Ni, Rh or Ru,

(2) at least two metallic elements selected from a group consisting of said transition metallic elements, Ti, Mn and Cu, and

(3) either [at least] one of said (1)[,] or (2), and at least one of an n-type dopant, and a p-type dopant

such that said ferromagnetic ZnO-type compound has a specific [a desired] ferromagnetic transition temperature [is achieved].

5. (Once Amended) A ferromagnetic ZnO-type compound in which [addition of] any one of (1) to (3) of claim 4 is added so that said ferromagnetic ZnO-type compound has a specific [performed to exhibit desired] light-filtering [characteristics] characteristic.

6. (Once Amended) A method for adjusting ferromagnetic characteristics of a ferromagnetic ZnO-type compound, wherein [at least one of] one of (1) to (3)

(1) at least one metallic element selected from a group consisting of transition metallic elements of V, Cr, Fe, Co, Ni, Rh or Ru,

(2) at least two metallic elements selected from a group consisting of said transition metallic elements, Ti, Mn and Cu, and

(3) either [at least] one of said (1)[,] or (2), and at least one of an n-type dopant, and a p-type dopant

is added to said ZnO-type compound for adjusting ferromagnetic characteristics, said one of (1) to (3) being controlled by an amount of added elements [by adjusting densities of said transition metallic elements], Ti, Mn, Cu or n-type dopant or p-type dopant or by [varying combinations of these metallic] a combination of said added elements.

7. (Once Amended) The adjusting method of claim 6, wherein the ferromagnetic transition temperature is adjusted to a desired temperature by controlling at least one of said amount of said combination [using at least one method by adjusting the density or by varying combinations of metallic elements as listed in said (2)].

8. (Once Amended) The adjusting method of claim 6, wherein the ferromagnetic state is stabilized [adjusting ferromagnetic energy] by crystal-mixing at least two types of metallic elements as listed in said (2), so that the entire energy decreases by kinetic energy based on holes or electrons introduced by said crystal-mixing [and by decreasing the entire energy through kinetic energy by holes or electrons introduced by said] metallic elements themselves.

9. (Once Amended) The adjusting method of claim 6, wherein the ferromagnetic state is stabilized by crystal-mixing at least two types of metallic elements as listed in said (2), so that a [and by controlling the size and sign of] magnetic

interaction between metallic atoms is controlled by [through] holes or electrons introduced by said crystal-mixing metallic elements themselves.

10. (Once Amended) The adjusting method of claim 6, wherein a ferromagnetic ZnO-type compound with desired light-filtering characteristics is obtained by crystal-mixing at least two types of metallic elements as listed in said (2), so that transmitting characteristics of light is controlled by [controlling the size and sign of magnetic interaction between metallic atoms through] holes or electrons introduced by said crystal-mixing metallic elements themselves [and by controlling transmitting characteristics of light owing to crystal-mixing of said metallic elements].